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STUDIES ON SEED MYCOFLORA OF SOME MEDICINAL PLANTS IN AKOLA DISTRICT (MS) INDIA

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ABSTRACT

An experiment was conducted to determine the seed born mycoflora of *Aegle marmelos* (L.) Corr., *Basella rubra* L., *Limonia acidissima* L., *Nyctanthus arbortristis* L. and *Tectona grandis* L. Unsterilized seed samples were collected from different part of Akola district (MS) in India, and tested by two methods blotter technique and agar plate method by their mycoflora. Total sixteen fungi were recorded on both the medium. Their frequency in samples and incidence percentage in seeds were recorded. Only eight fungal species were recorded in blotter media and agar plate method. *Nyctanthus arbortristis* recorded the maximum sps. as *Cladosporium, Phytophthora, Brachysporium, Fusarium, Aspergillus, Trichoderma* and *Physarum.* Minimum numbers of species were recorded in *Basella rubra* L. as *Erysiphe and Ustilago.*

Keywords: Seed mycoflora, medicinal plants

INTRODUCTION

Seeds are regarded as highly effective means for transporting plant pathogens over long distances. Numerous examples exist in agriculture literature for the international spread of plant diseases as a result of the importation of seeds that were infected or contaminated with pathogens (Agarwal and Sinclair 1996).

Seed fungal mycoflora are of considerable importance due to their influence on the overall health, germination and final crop stand in the field. Infected seed plays a key role in the dissemination of plant pathogens and disease establishment (Agrawal 1981). They are carriers of some important seed-borne diseases caused by microorganisms which results in considerable losses in yields. Some of the seed-borne fungi were found to be very destructive, caused seed rot, and decreased seeds germination. Also, cause pre and post germination death (Bolkan *et al.* 1976, Elarosi 1993). Seed-borne fungi are, however, easily controlled compared to air-borne or soil-borne fungi (Suryanarayanan 1978). Fungicides have been used for many years to control various plant pathogens (Bharath *et al.* 2006; Amer Habib *et al.* 2007).

Akola district of Vidarbha region is popular for cultivation of medicinal plants. In some parts of district there is a regular cultivation of herbs, shrubs and tree plants are planted on hedges of fields due to their medicinal value. Some of the common plants are selected to study mycoflora.

MATERIALS AND METHODS

Seeds of these five plants were collected from regular cultivars and the external and internal mycoflora were detected by blotter technique using three layers of sterilized moist blotter paper and agar plate method using Potato Dextrose Agar (PDA) from unsterilized and sterilized seeds. Determining external mycoflora by blotter, 100 apparently healthy seeds from each cultivar were taken and ten grains were seeded on sterilized Petri-plate for agar plate 100 seeds were taken and ten grains were placed at equidistance in each plate. While for internal mycoflora, seeds were surface sterilized with 0.1 % mercuric chloride solution for five minutes and then washed thoroughly with sterile distilled water. They were blotted dry enfolds of sterilized blotter before seeding them either on blotter or agar medium. The procedures for plating the seeds were similar as described for unsterilized seeds.

Seeded plates in both methods were arranged at a room temperature. Fungal flora after 5, 10 and 15 days from blotter and 5, 10 days from agar plate were observed examining colonies on and around the seeds as well as transferring their growth to PDA for further studies and record. After recording fungi both on germinated and non-germinated seeds.

RESULTS AND DISCUSSION

From the table 1 indicated that, all the cultivars were encountered with high percentage frequency of the intensity and seeds infection only to some fungal forms. The seed born mycoflora of *Aegle marmelos* (L.) Corr., *Basella rubra* L., *Limonia acidissima* L., *Nyctanthus arbortristis* L. and *Tectona grandis* L. Total sixteen fungi were recorded on five plant seeds on both the medium, they were as *Aspergillus, Erysiphe, Cladosporium, Meria, Mucor, Saccharomyces, Phytophthora, Trichoderma, Physarum, Ustilago, Protoplasmodium, Haprosporium, Brachysporium, Fusarium, Phymatotrichome and Coprobia.* Their frequency in samples and incidence percentage in seeds were recorded. *Saccharomyces* recorded the highest incidence mycoflora 51.75 on agar

Table 1 – Percentage incidence of Mycoflora isolated from Medicinal Plants

S. N.	Name of Fungi	Blotter Media				Agar Plate Media			
		US		SS		US		SS	
		A	B	A	B	A	B	A	B
1	*Aspergillus*	2.70	1.00	0.00	0.00	6.41	7.24	0.00	0.00
2	*Erysiphe*	4.15	1.20	0.20	0.00	0.65	1.00	0.00	0.00
3	*Cladosporium*	10.50	3.90	21.70	2.25	9.50	10.95	10.20	5.40
4	*Meria*	1.45	0.50	0.00	0.00	3.92	4.50	1.73	1.00
5	*Mucor*	0.00	0.00	0.00	0.00	2.90	3.20	0.00	0.00
6	*Saccharomyces*	37.50	12.90	31.60	3.25	51.75	59.30	48.00	28.00
7	*Phytophthora*	20.00	9.00	5.50	1.40	2.25	2.00	3.50	1.00
8	*Trichoderma*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	*Physarum*	20.00	9.50	0.00	0.00	50.70	47.00	0.00	0.00
10	*Ustilago*	4.25	2.00	75.00	20.00	4.50	4.00	60.50	18.50
11	*Protoplasmodium*	2.20	1.50	0.00	0.00	0.00	0.00	0.00	0.00
12	*Haprosporium*	1.07	0.50	0.00	0.00	0.00	0.00	0.00	0.50
13	*Brachysporium*	6.15	3.00	9.25	2.50	2.25	2.00	6.70	2.00
14	*Fusarium*	28.42	9.98	26.84	2.94	12.04	13.50	30.96	17.92
15	*Phymatotrichome*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	*Coprobia*	7.90	2.80	4.50	0.45	3.54	4.25	1.70	1.00

US: - Unsterilized Seeds
SS: - Sterilized Seeds
A - % intensity of fungus
B - % Cumulative seed infection

Table 2 – Percentage incidence of Mycoflora isolated from Medicinal Plants

S.N.	Name of Medicinal Plants	Blotter Media	Agar Media
1	*Aegle marmelos* (L.) Corr.	*Haprosporium*	*Meria*
2	*Basella rubra* L.	------	*Erysiphe, Ustilago*
3	*Limonia acidissima* L.	*Coprobia, Trichoderma*	*Mucor*
4	*Nyctanthus arbortristis* L.	*Cladosporium, Phytophthora, Brachysporium, Fusarium*	*Aspergillus, Trichoderma, Physarum*
5	*Tectona grandis* L. f.	*Protoplasmodium*	*Saccharomyces*

–agar media and lowest incidence of mycoflora recorded on *Trichoderma 0.00.Mucor* negligible mycoflora recorded on blotter media but on agar plate it was 2.90 and 3.20 respectively.

Only eight fungal species were recorded in blotter media and agar plate method. *Nyctanthus arbortristis* recorded the maximum sps. as *Cladosporium, Phytophthora, Brachysporium, Fusarium, Aspergillus, Trichoderma* and *Physarum*. Minimum numbers of species were recorded in *Basella rubra* L. as *Erysiphe and Ustilago.*

The major fungal from associated with *Nyctanthus arbortristis* which are *Cladosporium, Phytophthora, Brachysporium, Fusarium, Aspergillus, Trichoderma* and *Physarum*. While, the seeds of other plants were dominated and show less growth of fungal forms.

In general as reported by, Hasany *et. al.* (1968) from some of the rice varieties Aspergillus are common other fungal forms of *Rhizopus, Trichoderma, Mucor and Prechslera* were reported with their cultivars by several workers Agrawal & Singh 1974, Zainus & Nik 1977, Sharma and Siddiqui 1978, Supriaman and Palmar 1980.

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